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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,579	12/14/2001	Ye Wang	004770.00035	5668

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EXAMINER	
OPSASNICK, MICHAEL N	

ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,579	WANG, YE	
	Examiner	Art Unit	
	Michael N. Opsasnick	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 17-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12,13 and ~~17-41~~* (14, 17-37, 38-41) is/are rejected.

7)☒ Claim(s) *11,42 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Upon further searching in response to the after final amendments received on 3/8/06 and 4/25/06, prior art relevant to the current claims scope has been found; therefore, prosecution on the merits has been reopened, and the finality of the Office Action dated 12/27/2005 has been removed. The after final amendment received on 6/13/2006 has not been entered and therefore, claim 20 is not canceled.

Allowable Subject Matter

2. Claims 11,42,43, is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

3. The following is a statement of reasons for the indication of allowable subject matter:

As per dependent claims 11,42,43 the recited limitations pertaining to the second transient signal within a transient second and the implementation of the second type of ancillary data encoding is not explicitly taught by the prior art of record.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 12-14,17,18,21,22,32-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Cooke (6597961).

As per claims 12,32-36, Cooke (6597961) teaches:

"A method for decoding a sequence of transform-encoded audio data intervals to produce an audio sample, said method comprising the steps of: receiving transform-encoded audio data intervals to yield a sequence of decoded audio data intervals having a plurality of transform coefficients" as receiving encoded audio data at the decoder and unpacking the information, including transform coefficients (col. 4 lines 20-25);

"receiving ancillary data identifying the transient intervals" as in the unpacking of the audio data, a set transient flag occurring in the audio data is sent to the frame synthesizer (col. 5 lines 16-26);

"identifying transient intervals of the sequence that are defective" as detecting when a frame of audio data is bad or missing (col. 3 lines 49-54);

"replacing transform coefficients of the defective transient....defective" as replacing the lost audio frame with a frame of synthesized data (col. 8 lines 5-10), wherein a transient condition is determined in the previous frame; when the previous frame includes a transient, the lost frame is replaced by an interpolation of the next frame, and when the previous frame does not include a transient, the lost frame if replaced by an interpolation of that particular previous frame (Fig. 9, subblocks 914,916, and 918); and replacing the lost audio frame with an

interpolated frame data, said interpolation between the previous and next frame, when both of these frames contain transient signals (Fig. 9, subblock 912 to subblock 906).

As per claim 13, Cooke (6597961) teaches:

"determining whether a transient interval of the sequence is corrupted" as detecting both error and lost audio data frames (col. 3 lines 49-54).

As per claim 14, Cooke (6597961) teaches:

"wherein said step (d) comprises....transient interval" as using the previous frame data for interpolation (Fig. 9, subblock 914 to subblock 918).

As per claim 17, Cooke (6597961) teaches:

"the steps of: converting.....samples" as frame synthesizer generating audio based upon the non-defective plus replacement audio samples (col. 8 lines 45-51).

As per claim 18, Cooke (6597961) teaches:

"wherein said formatted audio samples are pulse code modulation formatted" as PCM formatted audio data (col. 4 lines 36-41).

As per claim 19, Cooke (6597961) teaches:

"comprises.....transient interval" as matching the bit field with a predetermined value associated with the transform that was used during the encoding process (col. 5 lines 60-64; that

is, the bit field pattern contains information as to which transform was used, and the corresponding transform is executed on the decoding end).

As per claims 21,37-41, Cooke (6597961) teaches:

"a device for concealing errors in a sequence of encoded audio data intervals, said device comprising: a decoder ....receiving transform encoded audio data....retrieving ancillary data...identifying transient intervals....defective" as receiving encoded audio data at the decoder and unpacking the information, including transform coefficients (col. 4 lines 20-25) and as in the unpacking of the audio data, a set transient flag occurring in the audio data is sent to the frame synthesizer (col. 5 lines 16-26);

"and an error concealment .....defective" as replacing the lost audio frame with an interpolated frame data, said interpolation between the previous and next frame, when both of these frames contain transient signals (Fig. 9, subblock 912 to subblock 906); wherein the original error can be measure as a transient as well (col. 7 lines 30-36; the "sudden onset" artifact that is not present in the original audio signal, as stated, is construed to be an error).

As per claim 22, Cooke (6597961) teaches:

"further comprising a buffer for storing....defective" as frame buffer storing the previous, current, and next frame (col. 4 lines 49-55), of which the buffer can contain transients that are considered non-defective (Fig. 9, subblock 912 to subblock 906 – the two frames of data, which include transients, are considered to be good enough to be used in interpolation – subblock 906.).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-10,20,30,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson (5394473) in view of Laroche (6766300).

As per claims 1,30,31, Davidson (5394473) teaches:

"a method for transmitting a stream of audio data from an audio source to a receiver for decoding, said method comprising the steps of" audio encoder/decoder system (col. 9 lines 45-53) with audio signal input (Fig. 1a, subblock 102) for transmission; Fig. 1a, subblock 122; col. 15 lines 55-60);

"formatting the stream of audio data provided by the audio source into a sequence of audio data intervals" as formatter (col. 15 lines 50-57) assembling the transform coefficients of the audio signal for storage/transmission (col. 15 lines 55-58);

"transform encoding said sequence of audio data intervals to form a sequence of encoded audio data intervals, each said encoded audio data intervals having a plurality of

transform coefficients" as transform coefficients (col. 15 lines 52-54) generated for a series of transform blocks representing the time domain signal (col. 20 lines 1-21);

"and embedding ancillary data into a said encoded audio data interval preceding said encoded transient audio data interval, said ancillary data providing notification that said encoded transient audio data interval includes said short transient signal" as providing an error detection correction codes to the formatter" (col. 32 lines 58-64). (Davidson not only enters correction codes into the data stream (i.e., the error codes represent ancillary data), but the length of the transform block tell the decoder that the current data interval includes a short transient signal (col. 11 liens 33-48) – shorter block lengths are used for transients and maximum block lengths signify no transients).

As per claim 1, Davidson (5394473) teaches analyzing for transients, but uses the time domain signals to analyze for transients (col. 22, lines 6-40). However, Laroche (6766300) teaches the analysis of frequency domain signals to perform transient detection (Fig. 2a, 2b, col. 3 line 58 – col. 4 line10; Laroche takes the differential between each successive Y(t,k) represented by S(t) - col. 4 line 5; examiner notes that "t" in the S(t) function represents "time slice" t, and that Y(t,k) is the frequency amplitude in time slice "t" in frequency bin "k"; looking at Fig. 2a and 2b, S(t) represents the amplitude of the differential in a "k" bin between different time slices, or FFT frames). Therefore, it would have been obvious to one of ordinary skill in the art of transient detection to modify the structure of Davidson (5394473) to move the transient detector to operate on frequency representations of the original signal because it would

advantageously remove the problem of tempo-modulation that occurs when performing transient analysis in the time domain. (Laroche, col. 2 lines 7-15).

As per claim 2, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"wherein said audio data intervals are formatted as pulse code modulation data" as the use of PCM data as a choice for the transform (Davidson (5394473), col. 8 lines 30-40). Examiner notes that Davidson's preferred coder is a transform coder (col. 15 line 35 – col. 16 line 10), however, Davidson shows that not one type of signal-independent coding which provides maximum coding gain (col. 8 lines 45-50), and that PCM is a design choice (col. 8 lines 37-40).

As per claim 3, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

" wherein said step of transform encoding comprises the step of applying a modified discrete cosine transform to said sequence of audio data intervals" as performing modified DCT (Davidson (5394473), Fig. 26 e).

As per claim 4, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"wherein said step of transform encoding comprises the step of applying a shifted discrete Fourier transform to said sequence of audio data intervals" as applying a shift in

the block length of the sampling block while performing a DST; the shift in block length is equivalent to a shifted discrete Fourier transform ~ a shift in block length is a shift in the actual number k of S(k) (Davidson (5394473), col. 20 lines 23-46; referring back to col. 19 lines 40-56).

As per claim 5, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"wherein said step of analyzing comprises the step of performing a frequency analysis on said transform coefficients to detect a short transient signal" as short term block transform coefficients (Davidson (5394473), col. 22 lines 8-35; col. 24 lines 30-35).

As per claim 6, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"wherein said step of performing a frequency analysis comprises the step of extracting a feature value from said transform coefficients" as the feature value is the peal of the signal (Davidson (5394473), col. 23 lines 50-55).

As per claim 7, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"wherein said feature vector comprises a member of the group consisting of a primitive band energy value, an element-to-mean ratio of band energy, and a differential

band energy value" as calculating the power-spectral density energy measure (Davidson (5394473), col. 43 lines 50-62). Davidson (5394473) suggests an alternate embodiment of measuring power spectral densities to determine required frequency resolution. A power spectral density, by definition, measures the average power of a signal over a frequency range (or in other words) power equates to energy and frequency range equates to band-range.

As per claim 8, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"wherein said step of performing a frequency analysis comprises the step of applying a shifted discrete Fourier transform" as applying a shift in the block length of the sampling block while performing a DST; the shift in block length is equivalent to a shifted discrete Fourier transform ~ a shift in block length is a shift in the actual number k of S(k) (Davidson (5394473), col. 20 lines 23-46; referring back to col. 19 lines 40-56).

As per claim 9, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"sending said encoded audio data interval having said ancillary information to the receiver; and subsequently sending said encoded transient audio data interval to the receiver" as sending the signal to the decoder and the de-formatter (Davidson (5394473), Fig. 1b).

As per claim 10, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"wherein said short transient signal comprises a drumbeat" as the signal content that Davidson (5394473) addresses can be a music signal (Davidson (5394473), col. 22 lines 18-20). It is well known in the art of audio and music that music includes drumbeats.

As per claim 20, the combination of Davidson (5394473) in view of Laroche (6766300) teaches:

"A device for transmitting streaming audio information, said device comprising" as audio signal input (Fig. 1a, subblock 102) for transmission; Fig. 1a, subblock 122; col. 15 lines 55-60);

"an encoder for formatting the audio information into a sequence of audio data intervals and for transform encoding said sequence of audio data intervals to form a sequence of coded audio data intervals" as a formatter (Davidson (5394473), col. 15 lines 50-57) and as transform coefficients (Davidson (5394473), col. 15 lines 52-54);

"and a transient detector for identifying by analysis of frequency domain transfer function.....transient signal" as analyzing transient signals on a short term basis (Davidson (5394473), col. 22 lines 4-20).

8. Claims 23,24,28,29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooke (6597961) in view of Davidson (5394473).

As per claim 23, Cooke (6597961) teaches:

"An error concealment system suitable for use in converting audio streaming information into an audio sample, said error concealment system comprising" as audio concealment for streaming audio (col. 1, lines 5-10, col. 1 lines 24-28, and col. 2 lines 17-19);

"and a receiving terminal for converting said sequence of coded audio data intervals into the audio sample, said receiving terminal including an error concealment unit for replacing a defective said transient audio data interval with an error-free transient audio data interval" as receiving audio data (col. 3 lines 10-20; col. 3 lines 49-51), detecting errors (col. 3 lines 52-54), and replacing the defective frame with an interpolated synthetic frame based upon a previous transient signal and a next frame transient signal (Fig. 9, subblock 912 to subblock 906 to subblock 908 to subblock 910).

Cooke (6597961) also teaches a codec device (codec short for coder/decoder) and specifically mentions the use of lapped transform codecs (col. 6 lines 32-34); but Cooke (6597961) is silent on the details of how the coder in a lapped transform coder handles transient signals. Davidson (5394473), however, teaches a lapped transform audio encoder (Davidson (5394473), col. 4 lines 12-16) with a transient detector for classifying a coded audio data interval having a short transient signals (Davidson (5394473), the shorter block lengths are used solely for transients, maximized block lengths signify no transients -- col. 11 lines 33-47; col. 15 lines 40-45, col. 21 line 65 – col. 22 line 20). Therefore, it would have been obvious to one of ordinary skill in the art of audio encoding to specify the lapped transform coder as taught by

Cooke (6597961) with a lapped transform coder that detects and notes transients via varying block lengths(as taught by Davidson (5394473)) because it would advantageously provide the flexibility to give needed temporal resolution (a characteristic of short block lengths – which are used for transients) and enough frequency resolution (bandwidth; a characteristic of long block lengths – which are used for 'normal' audio frames), Davidson (5394473), col. 4 lines 46-63).

As per claim 24, the combination of Cooke (6597961) in view of Davidson (5394473) teaches:

"wherein said receiving terminal further comprises a decoder for decoding said sequence of coded audio data intervals" as decoding the incoming audio data (Cooke (6597961), Fig. 2, subblock 204).

As per claims 28,29, the combination of Cooke (6597961) in view of Davidson (5394473) teaches a communications network connecting said receiving terminal with said audio source (Cooke (6597961), col. 3 lines 35-47, server and computer).

9. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cooke (6597961) in view of Davidson (5394473), as applied to claim 23 above, and further in view of Maggenti et al (6477150).

The combination of Cooke (6597961) in view of Davidson (5394473) teaches using the error concealment system in a wired network, including any communication link (in particular, Cooke (6597961), fig. 1, and col. 3 lines 35-47), but does not teach

wireless/telecommunication protocols as claimed in claims 25-27. Maggenti et al (6477150), however, teaches the use of an interface from an internet network (fig. 2, subblock 214) to wireless communications (Fig.2, subblocks 202,204, and 206 to 216 to 220; and a PSTN connection – subblock 222,208) transferring audio data (col. 7 lines 45-50). Therefore, it would have been obvious to one of ordinary skill in the art of communication to expand the network as taught by the combination of Cooke (6597961) in view of Davidson (5394473) into wireless devices because it would advantageously provide group communication services to an existing network (Maggenti et al (6477150), col. 1 lines 5-11, col. 2 lines 1-9).

Response to Arguments

10. Applicant's arguments filed 3/8/06,4/25/06 and 6/13/06 have been fully considered but are moot in view of the new grounds of rejection. Examiner notes the introduction of the Laroche reference teaching the analysis of frequency coefficients to determine transient periods.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please note on the PTO-892 form, Levine et al (5886276), col. 7 lines 35-61, and col. 8 lines 1-12.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Opsasnick, telephone number (571)272-7623, who is available Tuesday-Thursday, 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Richemond Dorvil, can be reached at (571)272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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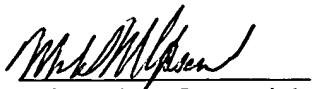

Michael N. Opsasnick
Examiner
Art Unit 2626